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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/739,229	12/18/2003	Byoung Hee Cho	29936/39870	1123

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EXAMINER

NHU, DAVID

ART UNIT PAPER NUMBER

2818

DATE MAILED: 03/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

11-A

Office Action Summary

Application No.

10/739,229

Applicant(s)

CHO, BYOUNG HEE

Examiner

David Nhu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

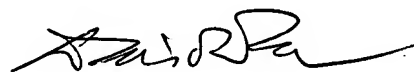
Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.


Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTIONS

Specifications

1. Page 2, "HDP oxide film burying process" should be --High Density Plasma oxide film burying process--

Abstract

2. The abstract of the disclosure is objected to because legal phraseology such as "**comprise**" is used. Correction is required. See MPEP & 608.01(b).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4 are rejected under 35 U.S.C. 102 (b) as being anticipated by Gousev et al (6,287,897 B1).

Regarding claim 1, Gousev, (see figures 1-10, col. 2, lines 60-67, col. 3, lines 1-67, col. 4, lines 1-25), teaches a method for forming a gate oxide film of a semiconductor device comprising the steps of: forming a gate oxide film 12 and a polysilicon film 16 sequentially on a semiconductor substrate 10; performing a nitrogen 14 ion implantation process for the semiconductor substrate including the gate oxide film and the polysilicon film; performing a thermal treatment process (RTP) to form barrier layers 18, 20 by combination of oxides and nitrogen at an interface between the semiconductor substrate and the gate oxide film, and at

an interface between the gate oxide film and the polysilicon film (see figures 4., 5, 6); and forming a nitride film 32 on the polysilicon film 16 (see figure 10).

Regarding claims 2-4, (see figures 1-12, col. 1-6), Gousev, also teaches forming a gate thermal treatment process is performed by a RTP spark annealing process; wherein the nitrogen ion implanting process is performed by using a source gas including nitrogen+, with a dose/concentration and an implantation energy of KeV (see col. 3, lines 7-24); wherein the RTP spark annealing process is performed at N2 gas ambient, a ramp up temperature (see col. 3, lines 25-37).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. Claims 1-4 are rejected under 35 U.S.C. 102(e) as being anticipated by Jeng (6,,562,730 B2).

Regarding claim 1, Jeng, (see figures 3-7, col. 4, lines 10-67, col. 5, 6, lines 1-67), teaches a method for forming a gate oxide film of a semiconductor device comprising the steps of: forming a gate oxide film 54 and a polysilicon film 56 sequentially on a semiconductor substrate 50; performing a nitrogen ion implantation process for the semiconductor substrate including the gate oxide film and the polysilicon film; performing a thermal treatment process (RTP) to form barrier layers 58 by combination of oxides and nitrogen at an interface between

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the semiconductor substrate and the gate oxide film, and at an interface between the gate oxide film and the polysilicon film (see figures 3, 4); and forming a nitride film 62 on the polysilicon film 56 (see figure 7).

Regarding claims 2-4, (see figures 1-7, col. 1-8), Jeng, also teaches forming a gate thermal treatment process is performed by a RTP spark annealing process; wherein the nitrogen ion implanting process is performed by using a source gas including nitrogen+, with a dose/concentration and an implantation energy of KeV (see col. 5, lines 25-51); wherein the RTP spark annealing process is performed at N₂ gas ambient, a ramp up temperature (see col. 5, lines 25-29).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Noble'116, Gardner'893, Kamal'348, Trivedi'395 are cited as of interest.

8. A shortened statutory period for response to this action is set to expired 3 (three) months and 0 (zero) day from the date of this letter. Failure to respond within the period for response will cause the application to become abandoned(see 710.02 (b)).

9. Any inquiry concerning this communication on earlier communications from the examiner should be directed to David Nhu (571)272-1792. The examiner can normally be reached on Monday-Friday from 7:30 AM to 5:00 PM. The examiner's supervisor, David Nelms can be reached on (571)272-1787.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Information regarding the status of an application may be obtained from the patent application information retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Nhu 

February 29, 2005

